UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 02526

CSAH NO. 7

OVER THE

RUM RIVER

DISTRICT 5 - ANOKA COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 105)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 02526, Piers 1 and 2, were found to generally be in good condition with no defects of structural significance. A light to moderate accumulation of timber debris was observed at Piers 1 and 2. Since the previous inspection, localized scour has exposed a small portion of the footings at each of Piers 1 and 2.

INSPECTION FINDINGS:

(A) Overall, the concrete of the piers was in smooth, sound condition with no structural defects; however, light scaling was observed at Pier 2 from the waterline to 3 feet below the waterline with a maximum penetration of 1/8 inch.

(B) A moderate accumulation of 18-inch-diameter and smaller timber debris was observed at Pier 2 from the downstream quarter point of the south face, around the upstream nose to the downstream quarter point of the north face. The timber debris extended from the channel bottom to the waterline and up to 30 feet out from the upstream nose of the pier. A light accumulation of up to 4-inch-diameter timber debris extended from the channel bottom up to 2 feet by 3 feet wide and 3 feet long at the upstream end of Pier 1.

(C) A band of light scaling was observed from the waterline up 3 feet with a maximum penetration of 1/8 inch on Piers 1 and 2.

(D) Top of footing was exposed at 5.8 feet below the waterline from the upstream nose to 8 feet downstream of the upstream nose along the north face of Pier 1 with no vertical face exposure.

RECOMMENDATIONS:

(A) Consideration can be given to the removal of timber debris during normal maintenance operations and the footing exposure at Pier 1 should be monitored during future inspections.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 02526

Feature Crossed: Rum River

Feature Carried: CSAH No. 7

Location: District 5 - Anoka County

Bridge Description: The bridge superstructure consists of four spans of multiple prestressed concrete girders supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and three reinforced concrete piers. The abutments are founded on concrete cast-in-place piles, while the piers are supported by rectangular concrete footings which are founded on timber piles. The piers are numbered 1 through 3 starting from the south end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Bradley A. Slyer, P.E., S.E.

Dive Team: John J. Loftus, Valerie Roustan

Date: August 14, 2007

Weather Conditions: Partly Cloudy, 68 °F

Underwater Visibility: 1.0 feet

Waterway Velocity: None / Negligible

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1, 2 and 3.

General Shape: The piers each consist of a rectangular shaft supporting a hammerhead pier cap, both with rounded ends. The pier shaft is supported by a rectangular concrete footing founded on timber piles.

Maximum Water Depth at Substructure Inspected: Approximately 5.6 feet.

4. WATERLINE DATUM

Water Level Reference: The top of Pier 1 on the downstream end.

Water Surface: The waterline was approximately 15.1 feet below reference. Waterline Elevation = 847.1.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/08/07

Item 113: Scour Critical Bridges: Code I/91

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes X No

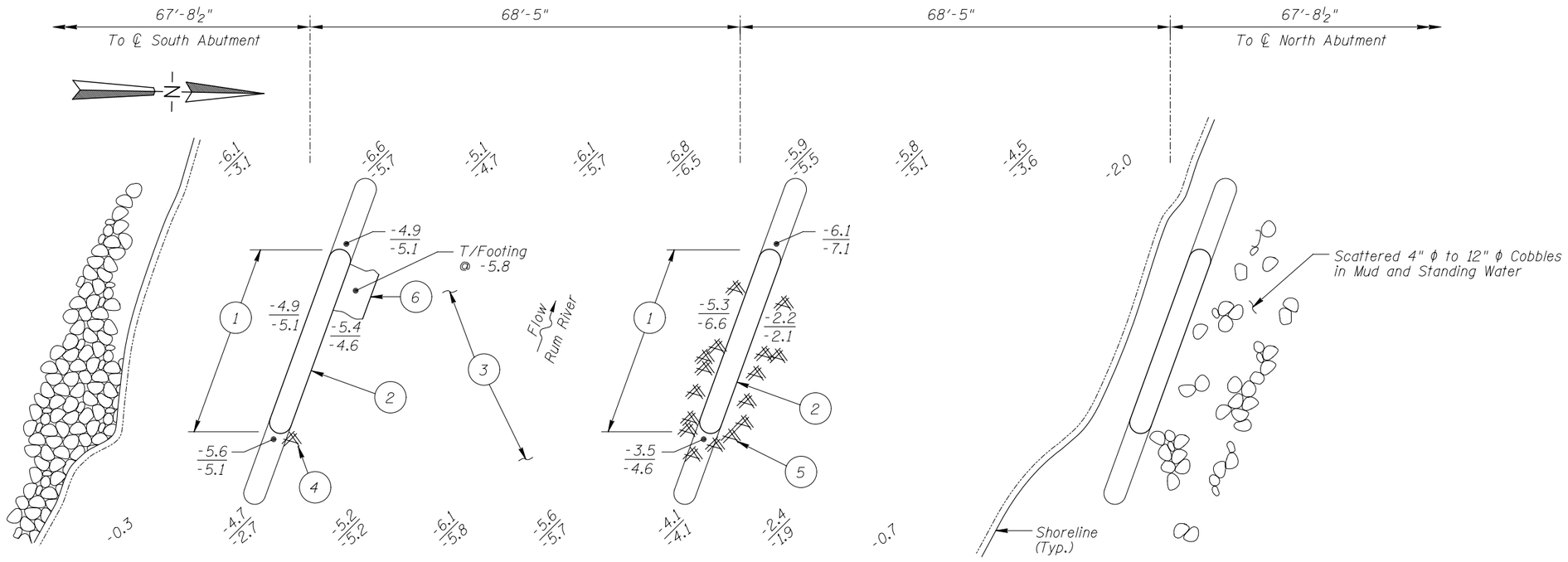
Photograph 1. Overall View of Bridge, Looking East.

Photograph 2. View of Pier 1, Looking Northeast.

Photograph 3. View of Pier 2, Looking Northeast.

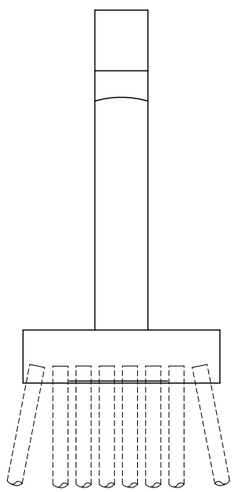
Photograph 4. View of Pier 3, Looking Northeast.

Photograph 5. View of South Abutment, Looking Southeast.



Pier 1 Pier 2 Pier 3

SOUNDING PLAN



TYPICAL END VIEW OF PIERS

INSPECTION NOTES:

1. Overall, the concrete of the piers was in smooth, sound condition with no defects of structural significance.
2. A band of light scaling was observed on Piers 1 and 2 from the waterline up 3 feet with a maximum penetration of 1/8 inch.
3. The channel bottom consisted of firm sand with 2 to 3 inches of probe rod penetration and 12-inch-diameter riprap located at the upstream noses of Piers 1 and 2 and along the south face of Pier 1.
4. Light accumulation of debris consisting of branches up to 4 inches from the channel bottom up 2 feet by 3 feet wide and 3 feet long at the upstream end of Pier 1.
5. A moderate accumulation of timber debris 18-inch-diameter or smaller consisting of logs and branches was observed from the downstream 1/4 point of south face, around the upstream nose, to the downstream 1/4 point of the north face. The debris extended from the channel bottom to the waterline and up to 5 feet off the pier faces and up to 30 feet off of the pier nose.
6. Top of footing was exposed at 5.8 feet below the waterline from the upstream nose to 8 feet downstream of the upstream nose along the north face of Pier 1 with no vertical exposure.

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on August 14, 2007, the waterline was located approximately 15.1 feet below the top of Pier 1 at the downstream end. This corresponds to a waterline elevation of 847.1.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units as well as around the pier structures.

Legend

-2.0	Sounding Depth (8/14/07)
-3.8	Sounding Depth (9/24/02)
	Timber Debris
	Riprap

Note:

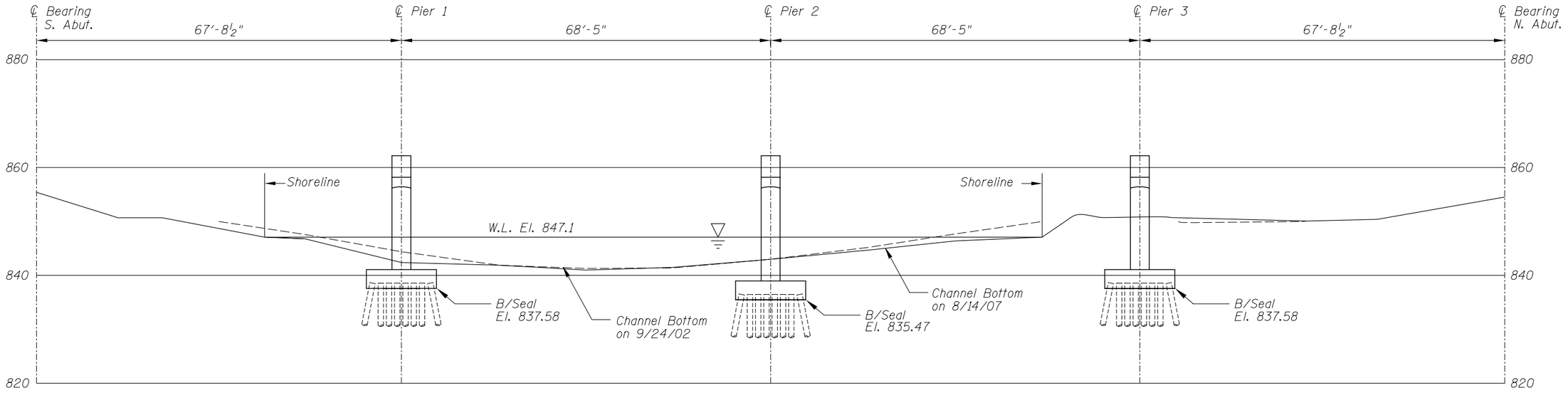
All soundings based on 2007 waterline location.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

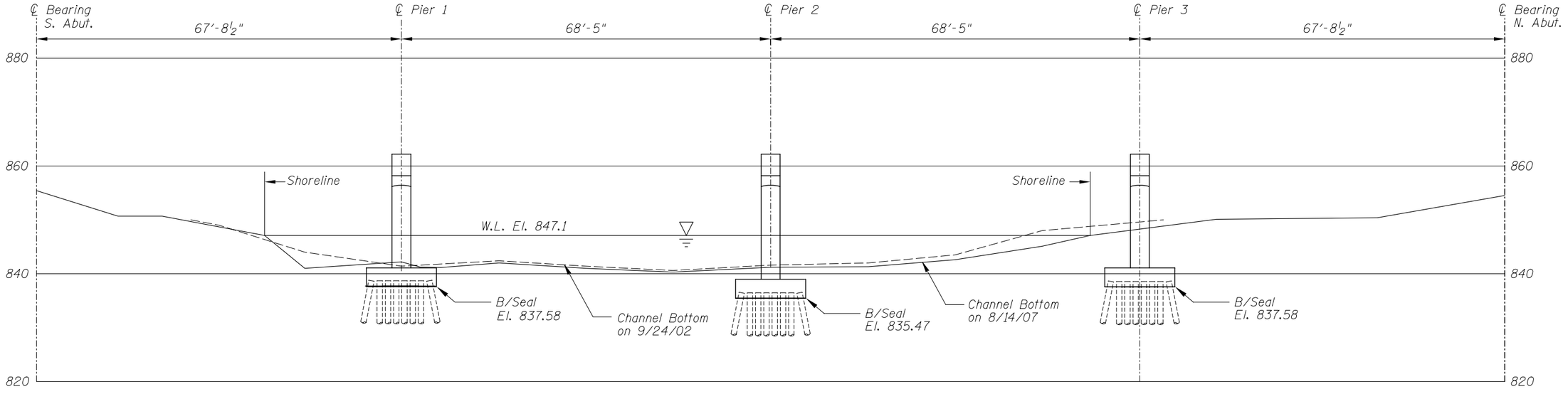
STRUCTURE NO. 02526
OVER THE RUM RIVER
DISTRICT 5, ANOKA COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: NTS
Code: 52210105	ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993	Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
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UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-0300 www.collinsengr.com	Date: AUGUST, 2007
Checked By: MDK		Scale: 1"=20'
Code: 52210105	ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184-000993	Figure No.: 2

OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: August 14, 2007

ON-SITE TEAM LEADER: Bradley A. Syler, P.E., S.E.

BRIDGE NO: 2526 WEATHER: Partly Cloudy, 68 °F

WATERWAY CROSSED: Rum River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: John J. Loftus, Valerie Roustan

EQUIPMENT: Scuba, Probe Rod, Lead Line, Sounding Pole, U/W Light, Scraper, Camera

TIME IN WATER: 9:45 A.M.

TIME OUT OF WATER: 10:39 P.M.

WATERWAY DATA: VELOCITY None / Negligible

VISIBILITY 1.0 feet

DEPTH 5.6 feet maximum at Pier 1

ELEMENTS INSPECTED: Piers 1, 2, and 3

REMARKS: Overall, the concrete piers were in good condition with no defects of structural significance, however, light scaling was observed from the waterline up to 3 feet around Pier 1 and 2 with a maximum penetration of 1/8 inch. A moderate accumulation of 18-inch-diameter and smaller timber debris consisting of a log and branches was observed at Pier 2 from downstream quarter point of the south face, around the upstream nose to the downstream quarter point of the north face. The debris extended from the channel bottom up to the waterline and 5 feet off the pier faces and up to 30 feet off of the pier nose. Top of footing was exposed at Pier 1 at 5.8 feet below the waterline from the upstream nose to 8 feet downstream of the upstream nose along the north side of pier.

FURTHER ACTION NEEDED: _____ YES X(*) NO

* Consideration can be given to the removal of timber debris during normal maintenance operations and the footing exposure at Pier 1 should be monitored during future inspections.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 2526
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Bradley A. Syler, P.E., S.E.
WATERWAY CROSSED Mississippi River

INSPECTION DATE August 14, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER (BRACING)	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	6.6’	N	7	7	9	N	7	7	N	7	7	7	7	N	N	N	N	N
	Pier 2	6.1’	N	7	N	9	N	7	7	N	6	6	6	7	N	N	N	N	N
	Pier 3	N	N	7	N	9	N	7	8	N	N	8	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the concrete piers were in good condition with no defects of structural significance, however, light scaling was observed from the waterline up to 3 feet around Pier 1 and 2 with a maximum penetration of 1/8 inch. A moderate accumulation of 18-inch-diameter and smaller timber debris consisting of a log and branches was observed at Pier 2 from downstream quarter point of the south face, around the upstream nose to the downstream quarter point of the north face. The debris extended from the channel bottom up to the waterline and 5 feet off the pier faces and up to 30 feet off of the pier nose. Top of footing was exposed at Pier 1 at 5.8 feet below the waterline from the upstream nose to 8 feet downstream of the upstream nose along the north side of pier.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.